

PISTON FOR A HYDRAULIC DASHPOT,

AND METHOD OF MANUFACTURING SUCH A PISTON

The present invention concerns a piston for a hydraulic dashpot as recited in the preamble to Claim 1. The invention also concerns a method of manufacturing such a piston.

Dashpots for motor vehicles are intended to attenuate the vibrations of the spring-suspended wheels, Such dashpots usually include a piston mounted on one end of a piston rod and traveling back and forth inside a cylinder.

A piston of this genus is known from German Patent 969 330.

This device includes a one-way valve in the form of a cup spring or stack of cup springs subject to the force of a compression-application mechanism mounted on a threaded bolt.

The valve's resilience is adjusted by rotating the compression-application mechanism.

The piston described in the aforesaid patent is accordingly adjustable, but extremely complicated, and must also be manufactured to very precise tolerances.

The object of the present invention is a piston with a valve, particularly a cup spring or stack of cup springs, with aa resilience that can easily be adjusted over a specific range.

As in the piston described in German Patent 969 330, moreover, the resilience in the suction phase will be adjustable independently of the resilience in the compression phase and vice versa.





1 the desired resilient or plastic deformation by way of  
2 prescribed screwing forces.

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4 The upper threads 15 on bolt 11 are welded into a shock-  
5 accommodating disk 25, fastening piston 1 to piston rod 3 and  
6 allowing adjustment of cup springs 8 and 9 to both the  
7 compression and suction phases by rotating nuts 17 and 18.

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9 The bolt 11 in the embodiment illustrated in Figure 2 is  
10 composed of two halves 26 and 27 originally provided with  
11 heads 28 and 29. The two halves are positioned with their  
12 heads together and for example welded, creating collar 22,  
13 subsequent to which bolt 11 can be further fastened together  
14 as specified with reference to Figure 1. Halves 26 and 27 can,  
15 however, alternatively be cemented together along with their  
16 heads. Piston 1 is fastened to piston rod 3 as specified with  
17 reference to Figure 1 except that the shock accommodation is  
18 provided by washer 19, which simultaneously applies tension to  
19 upper cup springs 8. The head of bolt 11 is provided with a  
20 hexagonal recess 30 instead of a nut. Upper cup springs 8 can  
21 be tightened and tensioned as specified with reference to  
22 Figure 1 by means of nut 18 once upper cup springs 8 have been  
23 appropriately adjusted.

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25 The facing surfaces of the piston halves 12 and 13 in the  
26 embodiment illustrated in Figure 3 are provided with  
27 depressions 31. In this embodiment as well, halves 26 and 27  
28 the two halves are cylindrical, at least in the vicinity of  
29 body 10. Body 10 is designed to allow the halves to be

1 fastened together by burn-off butt welding for example,  
 2 creating an outward-directed welding bead that fills  
 3 depressions 31. Halves 26 and 27 and depressions 31 are  
 4 relatively dimensioned to ensure that the bead will entirely  
 5 occupy the depressions. Cup springs 8 and 9 can be tensioned  
 6 by clamp connections 32 and 33, by welding, or by nuts 17 and  
 7 16.

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9 To facilitate positioning and securing piston halves 12 and 13  
 10 in relation to collar 22 or heads 28 and 29, the surfaces of  
 11 depressions 31 can be provided with knife-like radial or axial  
 12 elevations that dig into collar 22 or heads 28 and 29. With  
 13 piston halves 12 and 13 appropriately oriented in relation to  
 14 piston rod 3 and to bolt 11 or halves 26 and 27 accordingly,  
 15 the arrangement will be stable both axially and radially no  
 16 matter how the system is finally assembled.

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18 The piston halves 12 and 13 and bolt 11 in the two versions of  
 19 the embodiment illustrated in Figure 4 can be fastened  
 20 together in various ways. The bolts in both versions are  
 21 composed of two halves 26 and 27 welded together inside piston  
 22 halves 12 and 13. The bolt halves in the version represented  
 23 in the left half of the figure are provided with collars 34  
 24 and 35 that, once the bolt halves have been connected, rest  
 25 against the faces of the piston halves. All the components of  
 26 body 10 are accordingly assembled together.

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28 The mutually contacting surfaces of the piston halves 12 and  
 29 13 in the version represented in the right half of Figure 4

1 are provided with inwardly projecting noses 36. Once the  
2 halves 26 and 27 in this version have been welded together to  
3 create bolt 11, again cylindrical in the vicinity of body 10,  
4 the overall assembly will be stable.

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